

REMARKS

This paper responds to the Office Action mailed June 17, 2004 with reference to the above identified application.

Claims 1 – 17 are now pending in this application, following the cancellation of claim 18.

Apparatus claims 1-16 stand rejected under 35 USC §103(a) as anticipated by a new, broader, interpretation of Vanoli (US 5 712 716). Previous computer program claims 17 and 18 stand rejected as directed to non-statutory subject matter.

As suggested by the Examiner in paragraph 2 of the Office Action, claim 17 has been amended to include the limitations of claim 18, which has accordingly been cancelled.

The apparatus claims in the instant application each require analysis of signal levels both at and in-between the channel frequencies. As previously explained, it is known to use these inter-channel signal measurements in order to provide an interpolated value of the noise level, as described at page 8 lines 12 –15 of the instant application.

As also previously argued, Vanoli also uses inter-channel signal measurements in the same way, as explained at column 19 lines 18-35 of Vanoli.

According to the instant invention, these measurements are carried out upstream and downstream of a node of the network, and enable noise shaping in the node to be taken into account when carrying out signal to noise calculations further downstream of the node. Thus, a signal to noise ratio calculation according to the invention takes account of noise shaping across a previous, upstream node.

The Examiner argues that "one skilled in the art would have recognized that signal level measurements taken upstream and downstream would have enabled one skilled in the art to more accurately determine the signal to noise ratio further downstream of the node since doing so would have taken into account the effects of the node of interest".

However, it is submitted that this argument is based on a reconstruction of the invention using hindsight. There is no disclosure or teaching in the prior art of any method of taking account of shaping of the noise floor as a signal propagates across a network, and there is no disclosure or suggestion of the specific use of signal measurements at channel frequencies and between the channel frequencies for this purpose.

The independent claims also each require the signal measurements to be taken upstream and downstream of "a node", and "a node" is defined as a location "at which multiplexing and/or demultiplexing operations are carried out" (claim 1) or as "comprising an optical switching arrangement for the routing or forwarding of channels or groups of channels" (claims 10 and 17) or as "comprising a multiplexing and/or demultiplexing device" (claims 14, 15 and 16). The invention relates specifically to an apparatus and method which enables the shaping of the noise floor to be taken into account when a signal passes through a node, and in particular when the signal has been subjected to multiplexing and/or demultiplexing operations. As explained at page 8 lines 1-3, it is the demultiplexing and multiplexing operations which are primarily responsible for the noise shaping, as a result of the band pass filtering operations performed in such devices.

Even with the new, broader, interpretation of Vanoli adopted by the Examiner, and even if one of ordinary skill could be motivated to combine signal measurements from all of the optical couplers 38, this would still not provide the system of the invention. The instant invention requires the combination of signals from locations upstream and downstream of a node, in which optical multiplexing and/or demultiplexing or channel routing takes place. The optical couplers 38 are not "nodes" as defined by the independent claims in the

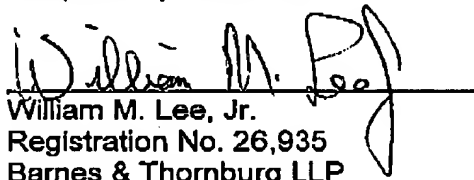
instant application. Instead, they are locations between successive line amplifiers at which there are no multiplexing or channel routing operations.

Vanoli simply discloses the use of a single interpolated noise level and the signal level at the determined channel frequency to provide signal to noise ratio measurement. Vanoli provides no additional teaching to one of ordinary skill in the field of the invention to the acknowledged prior art in the instant application.

There is no disclosure or suggestion in Vanoli of taking into account shaping of the noise floor as a signal passes through a node, and there is no disclosure or suggestion of any apparatus which could be used to achieve this.

In view of the remarks above, it is respectfully submitted that this application is in condition for allowance, and such action is therefore solicited.

Respectfully submitted,



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